
PerspECCtive

Theme:
Annual Conference Theme

When Mega Goes GIGA

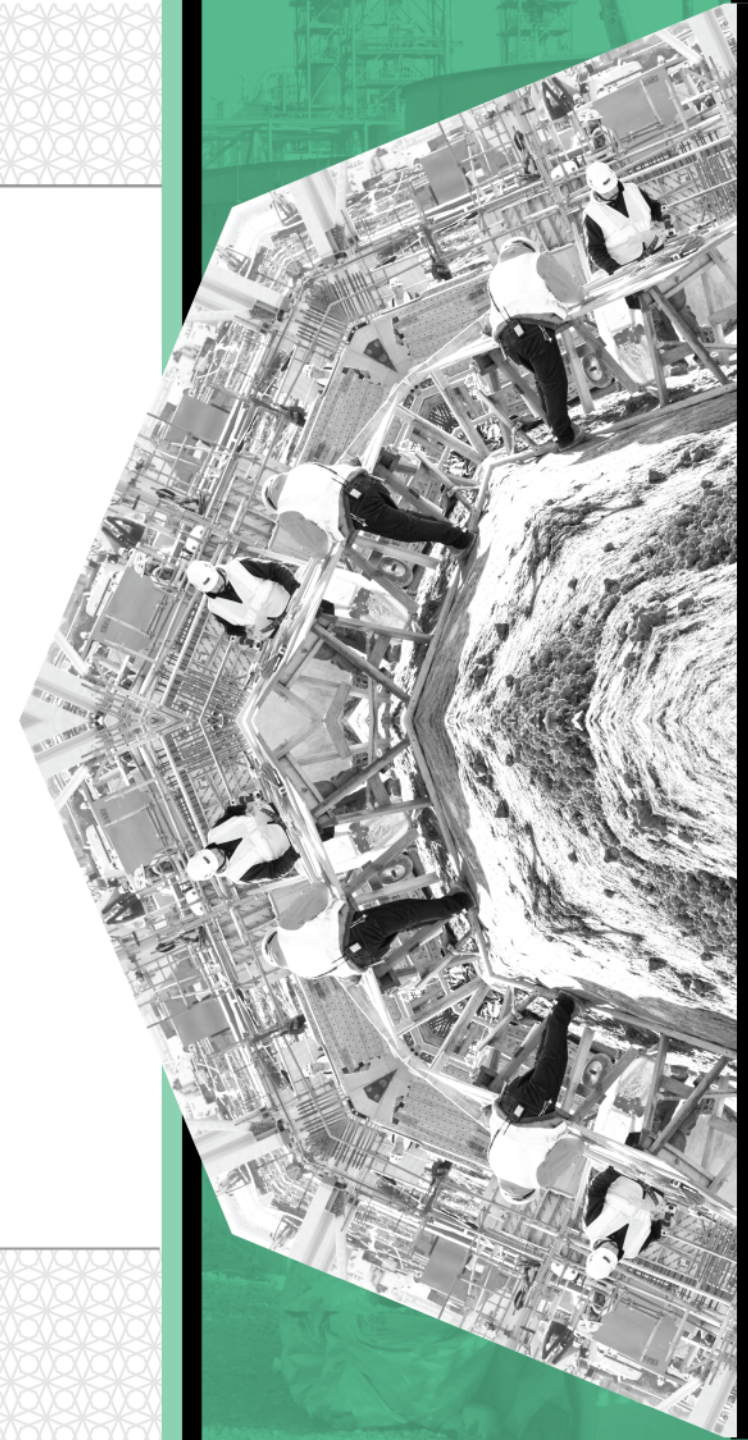
Joseph C. Brewer, Jr.
Dow Chemical VP – Sr. Consultant, Capital Project Delivery
Sadara – Chief Implementation Officer



Year:
2017

Date:
Sept. 6-9

Location:
Boca Raton, FL





Today's Objectives:

- Introduce the Sadara Project
- Discuss a Few of the Unique Challenges...

When Mega Goes GIGA

Latitude 26.94, Longitude 49.48

When Mega Goes GIGA

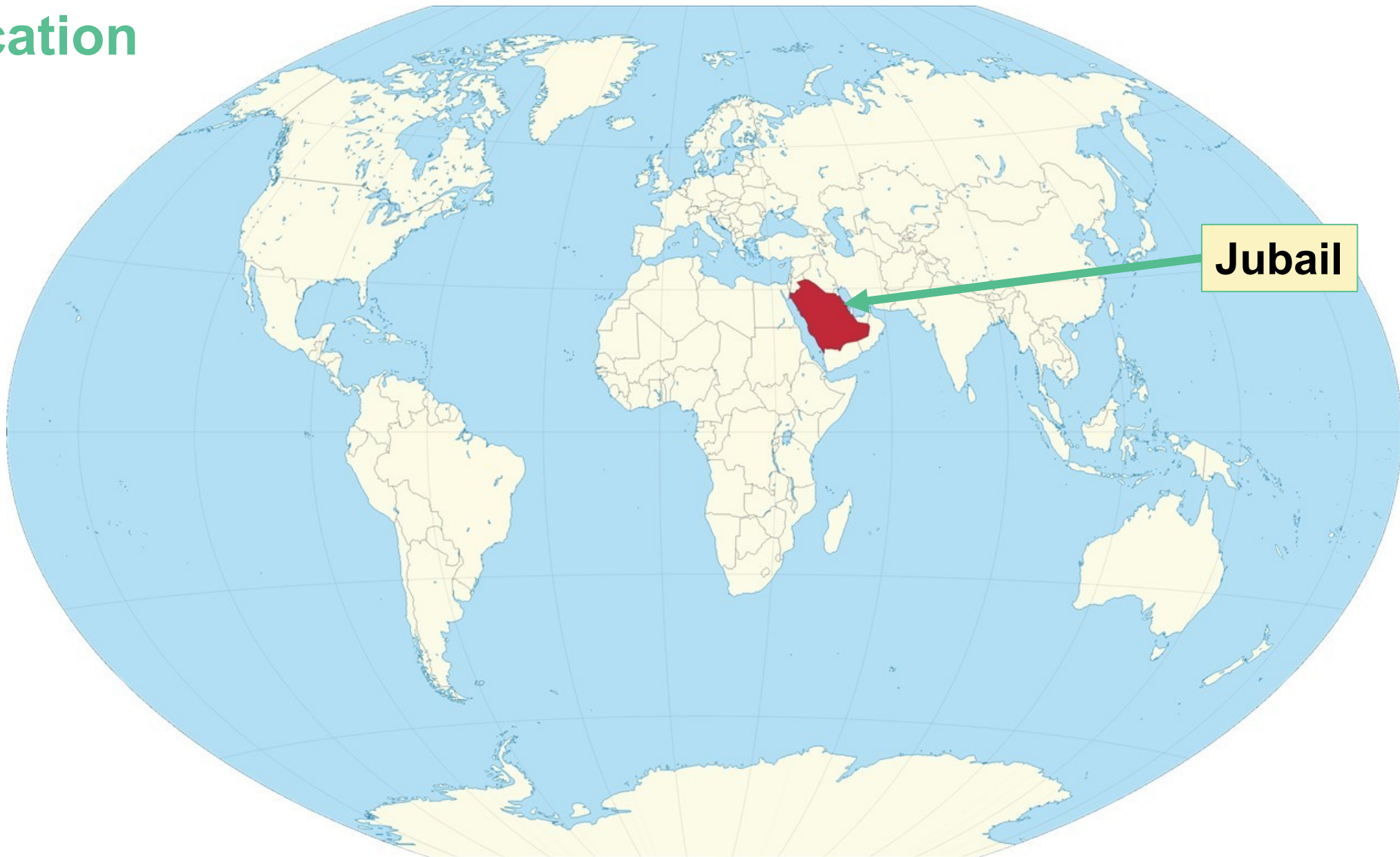
Sadara - Company Overview

- Joint Venture: Dow Chemical & Saudi Aramco
- Twenty-Six World Scale Production Units
- Extensive OSBL, Infrastructure & Off-Plot
- Location: Jubail, Eastern Province, Saudi Arabia
- Initial Memorandum of Understanding – May2007
- Company Incorporation – Oct2011

Sadara - Project Overview

- Largest Petrochemical Project Ever Designed & Built at One Time
- 27 Project Teams
- 25 Engineering Offices Worldwide
- 100+ Construction Contractors
- Peak Site Staffing: 60,000 Workers
- 0.033 Total Recordable Incident Rate
- Nominal \$20B Investment

Location



Location



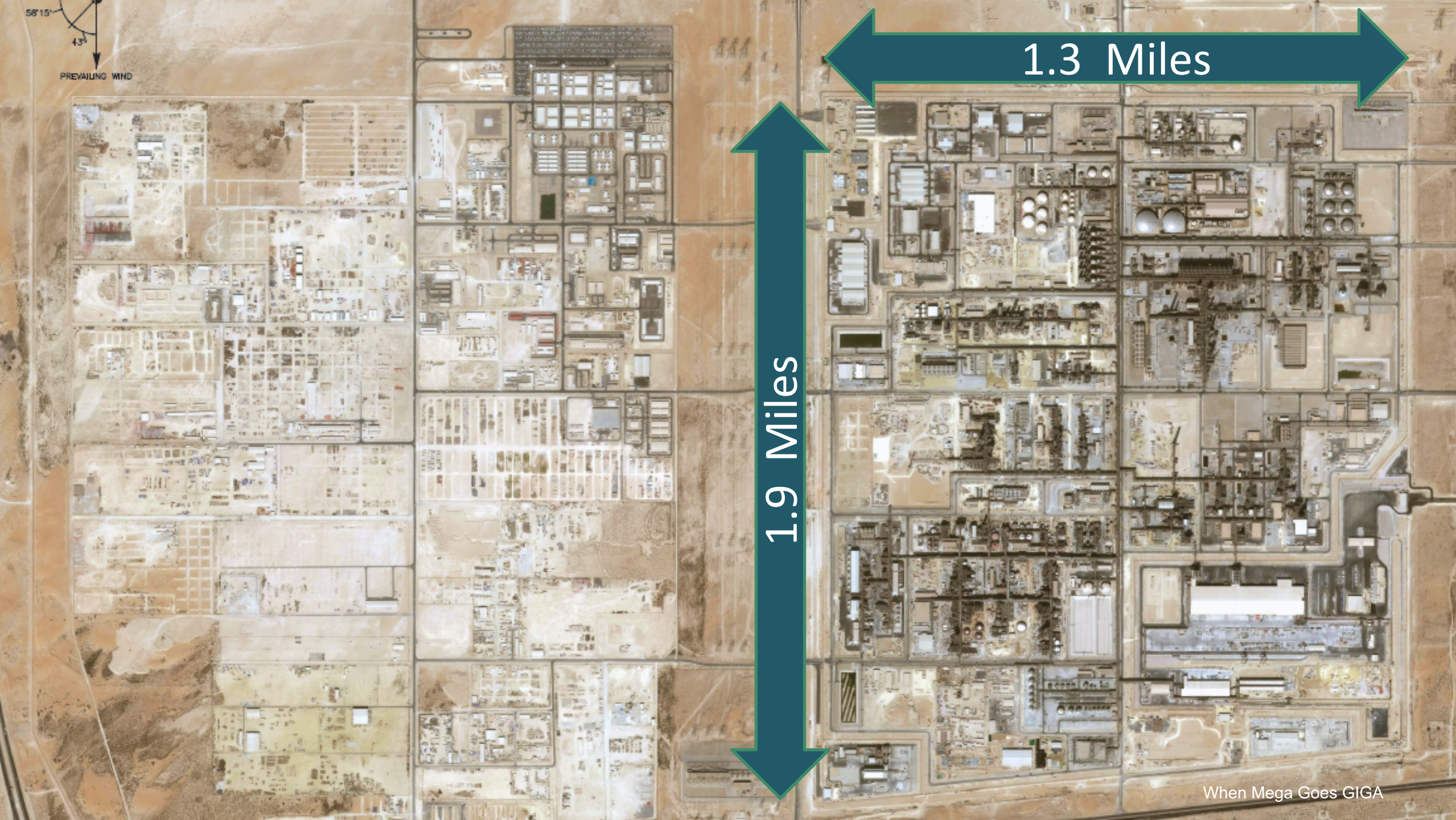
Jubail

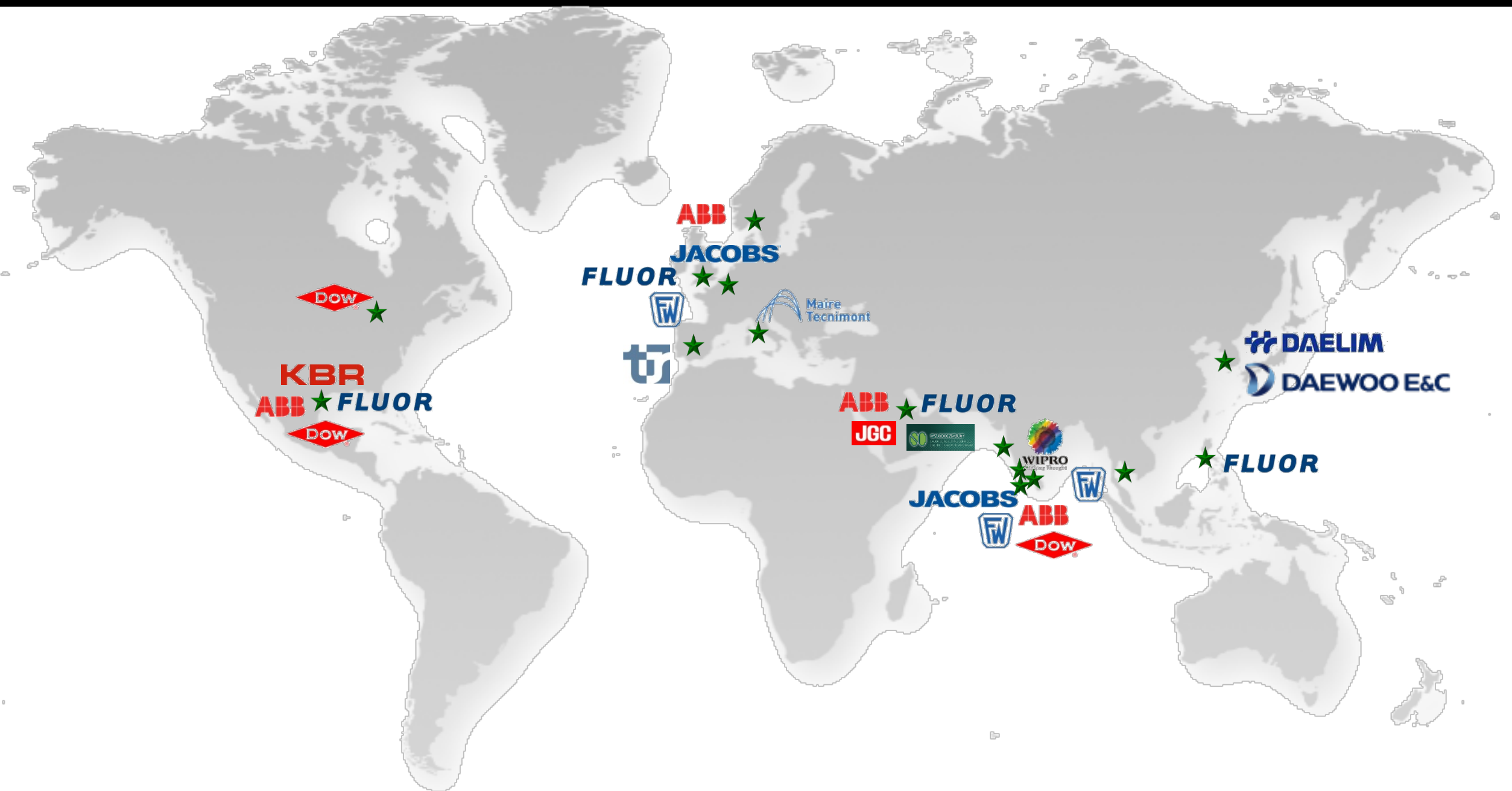
58°15'
43°
PREVAILING WIND

1.3 Miles

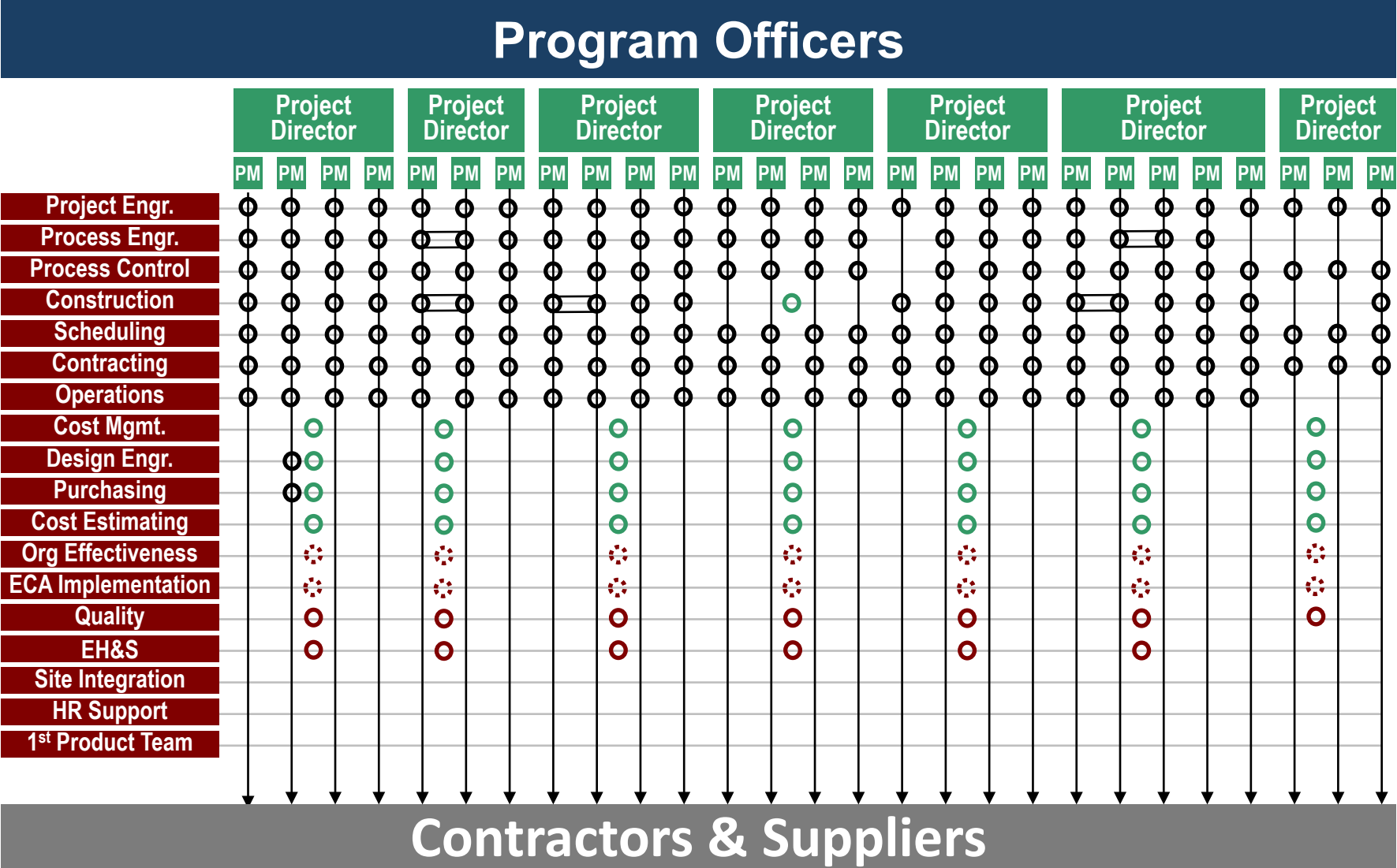
1.9 Miles

When Mega Goes GIGA

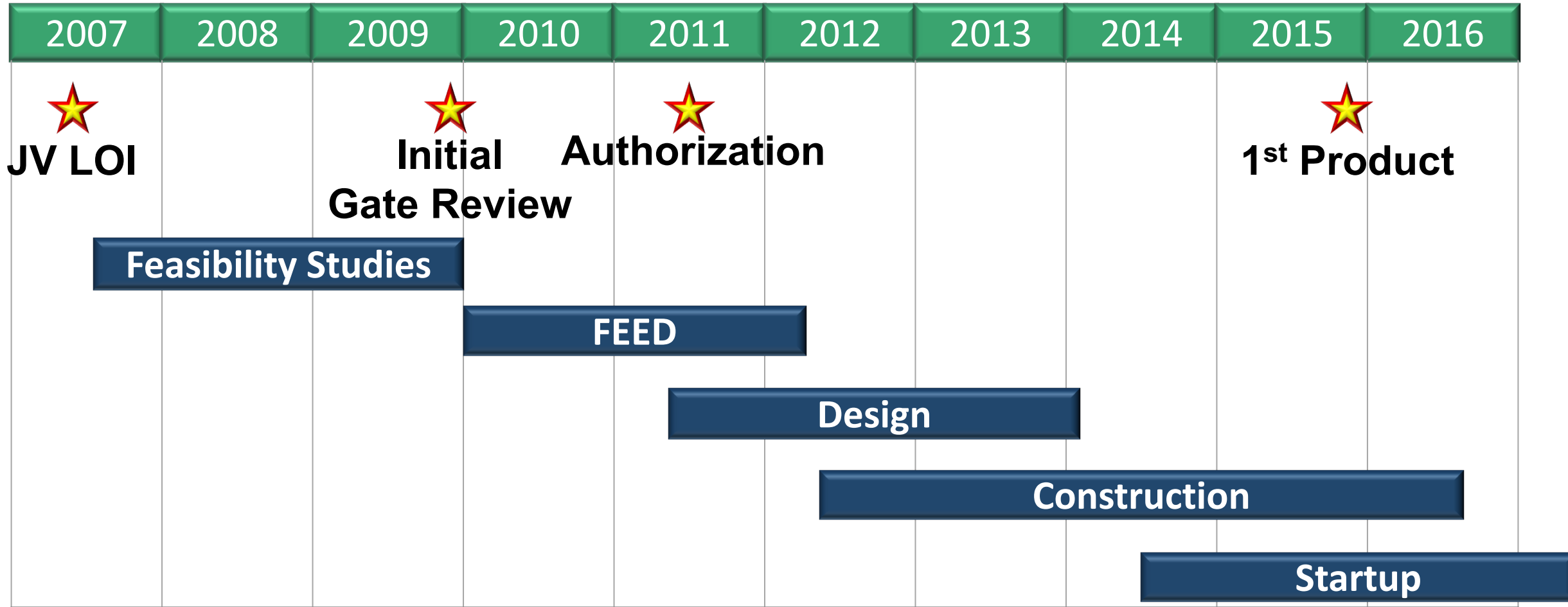




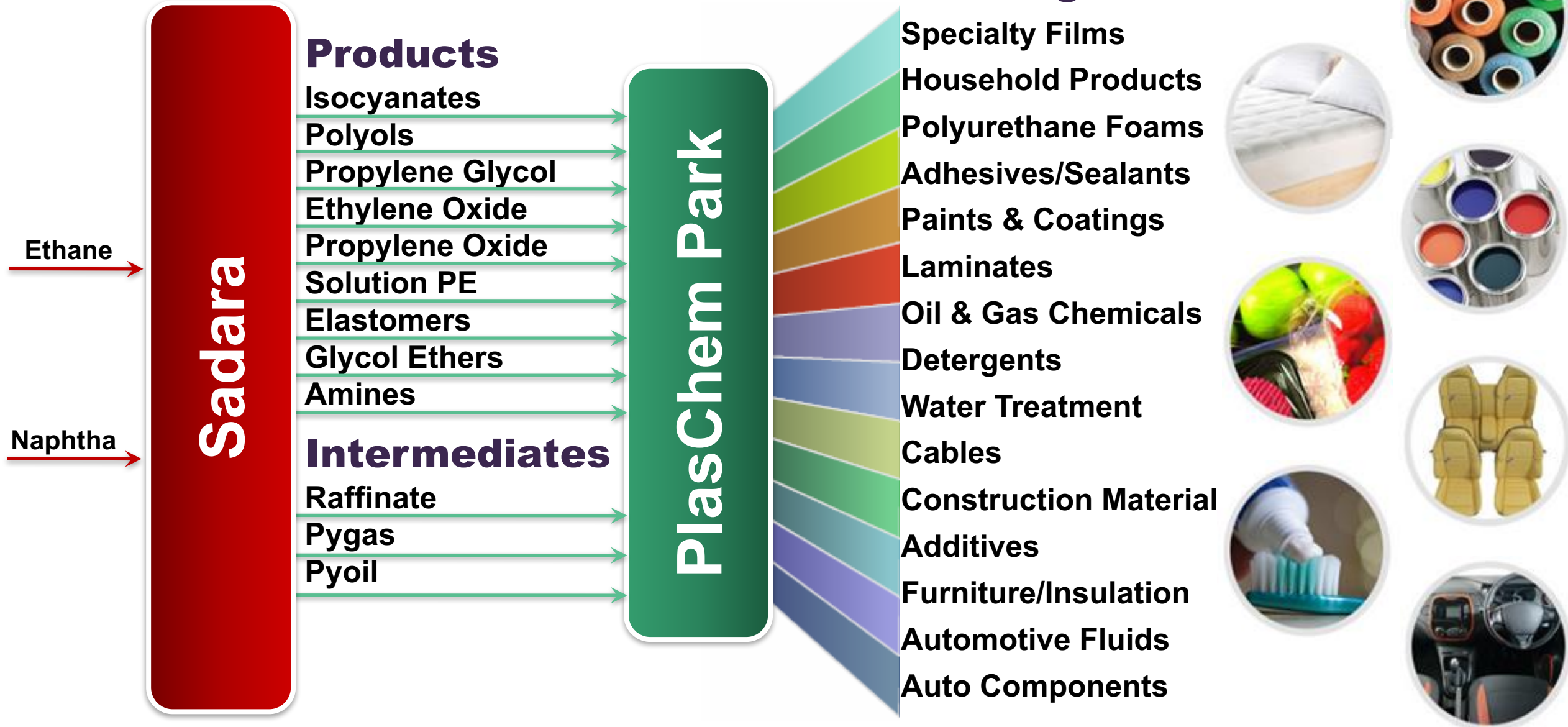
4 Dimensional Organization



Timeline



Sadara Configuration





Olefins

\$3B

Four Project Teams



When Mega Goes GIGA



Chemicals I
Chlorine

\$1B

Three Project Teams



When Mega Goes GIGA



Chemicals II

Isocyanates

\$2B

Four Project Teams

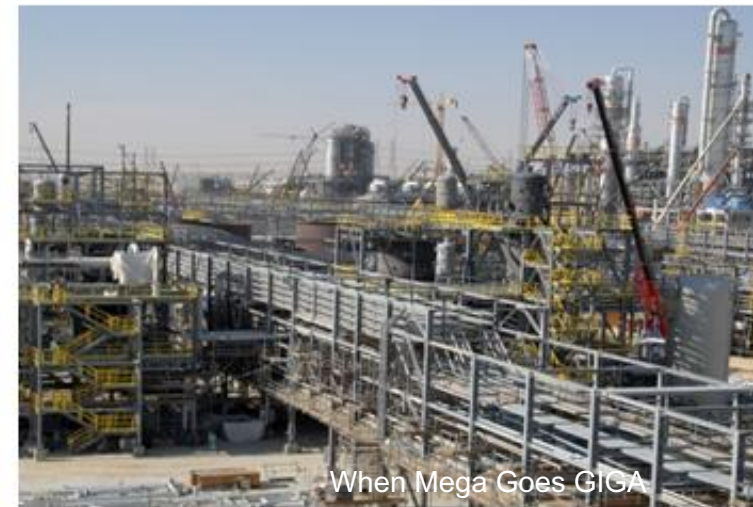
Title of Presentation

Chemicals III

EO/PO & D

\$2B

Four Project Teams



When Mega Goes GICA



Site Development & Logistics

\$2B

Five Project Teams



When Mega Goes GTCA



Utilities Power & Infrastructure

\$2B

Four Project Teams

Title of Presentation



Leveraged Assets

\$1B

Three Project Teams



When Mega Goes GIGA





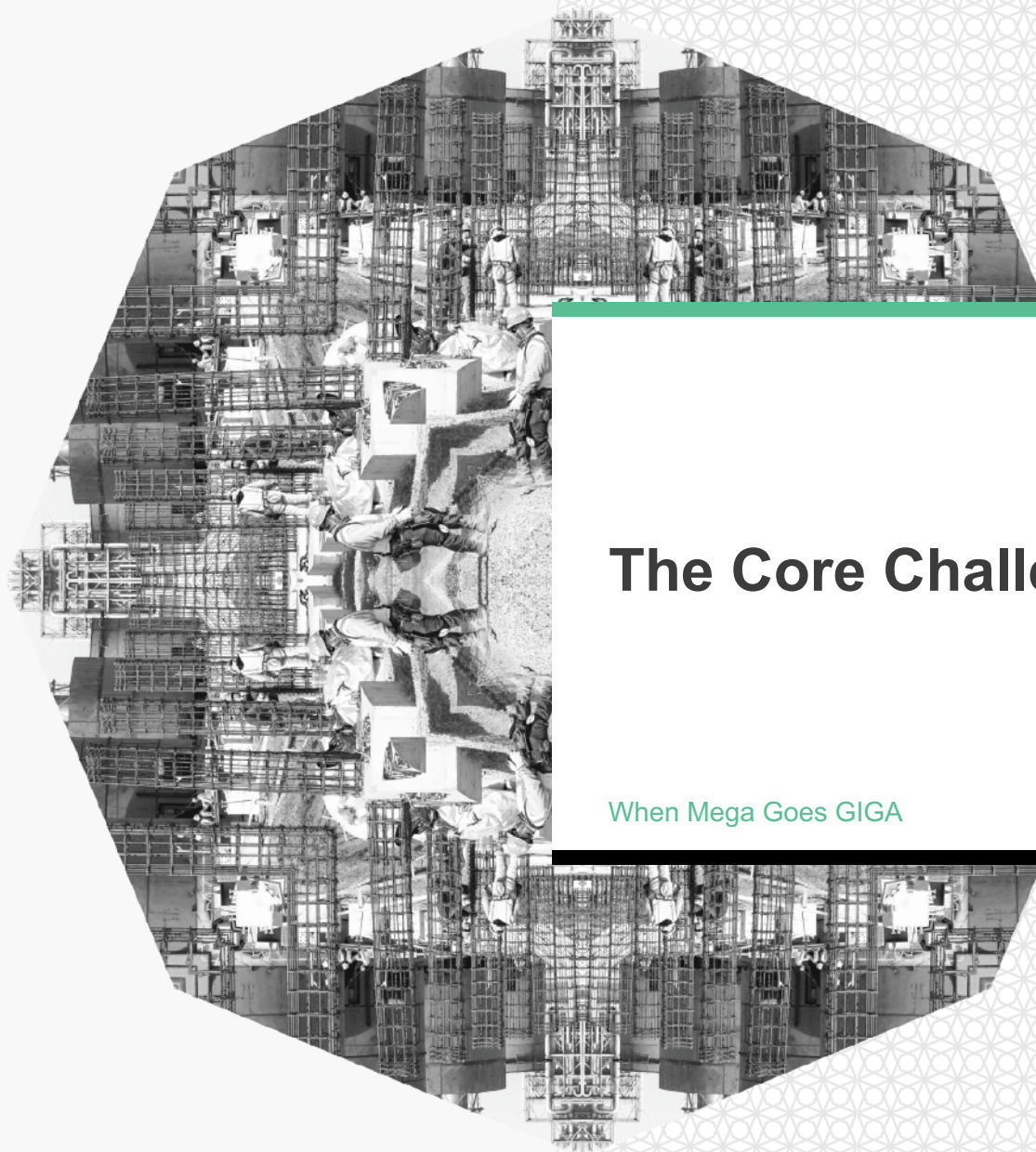
Unique Challenges...

When Mega Goes GIGA

When Mega Goes GIGA

Topics

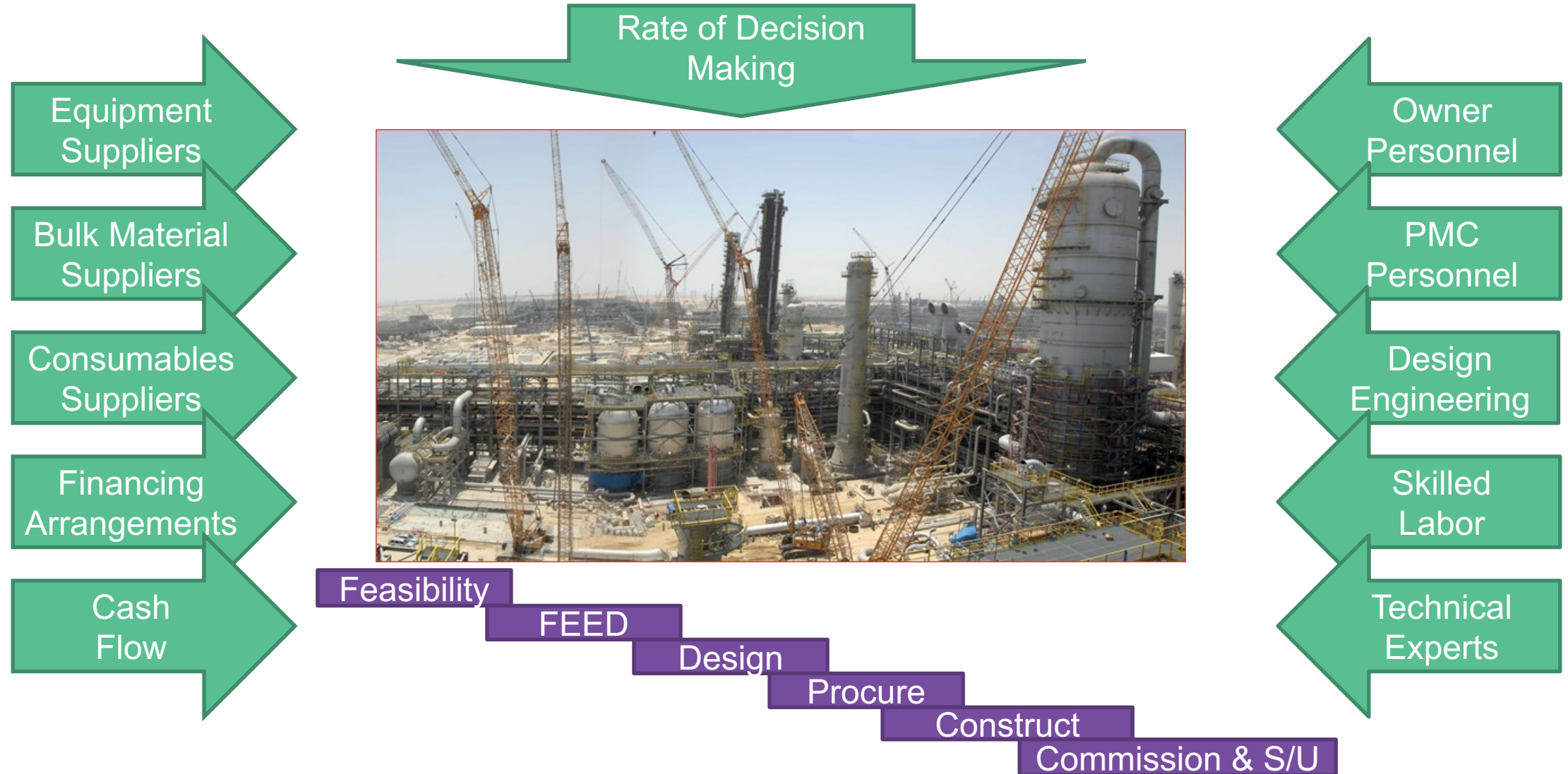
- The Core Challenge
- Nonlinearities
- New Capabilities Required
- Contracting Potpourri
- Back to Fundamentals



The Core Challenge

When Mega Goes GIGA

The Core Challenge: GIGA is a “Supply” Problem

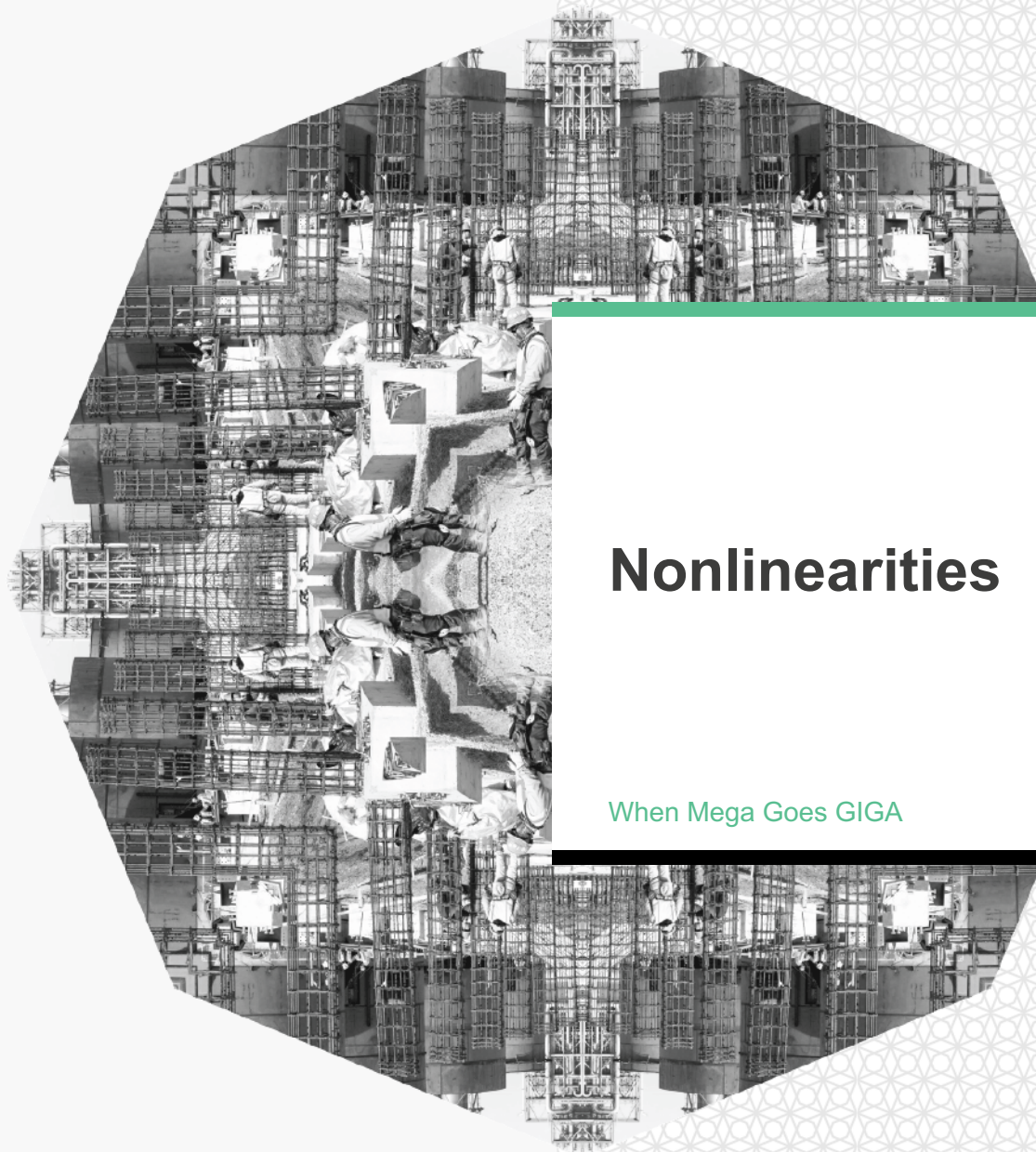


Concentrate the Buy – But Don't Hurt Yourself

- Program Leveraged Pricing Agreements Can Deliver Significant Savings
- GIGA Volumes Can Bring Very Low Prices
- GIGA Volumes Can Overwhelm Suppliers
- GIGA Must Limit the Volume Committed to Any One Supplier
- GIGA Must Maintain a Higher Expediting/Inspection Presence

Strategic Sourcing

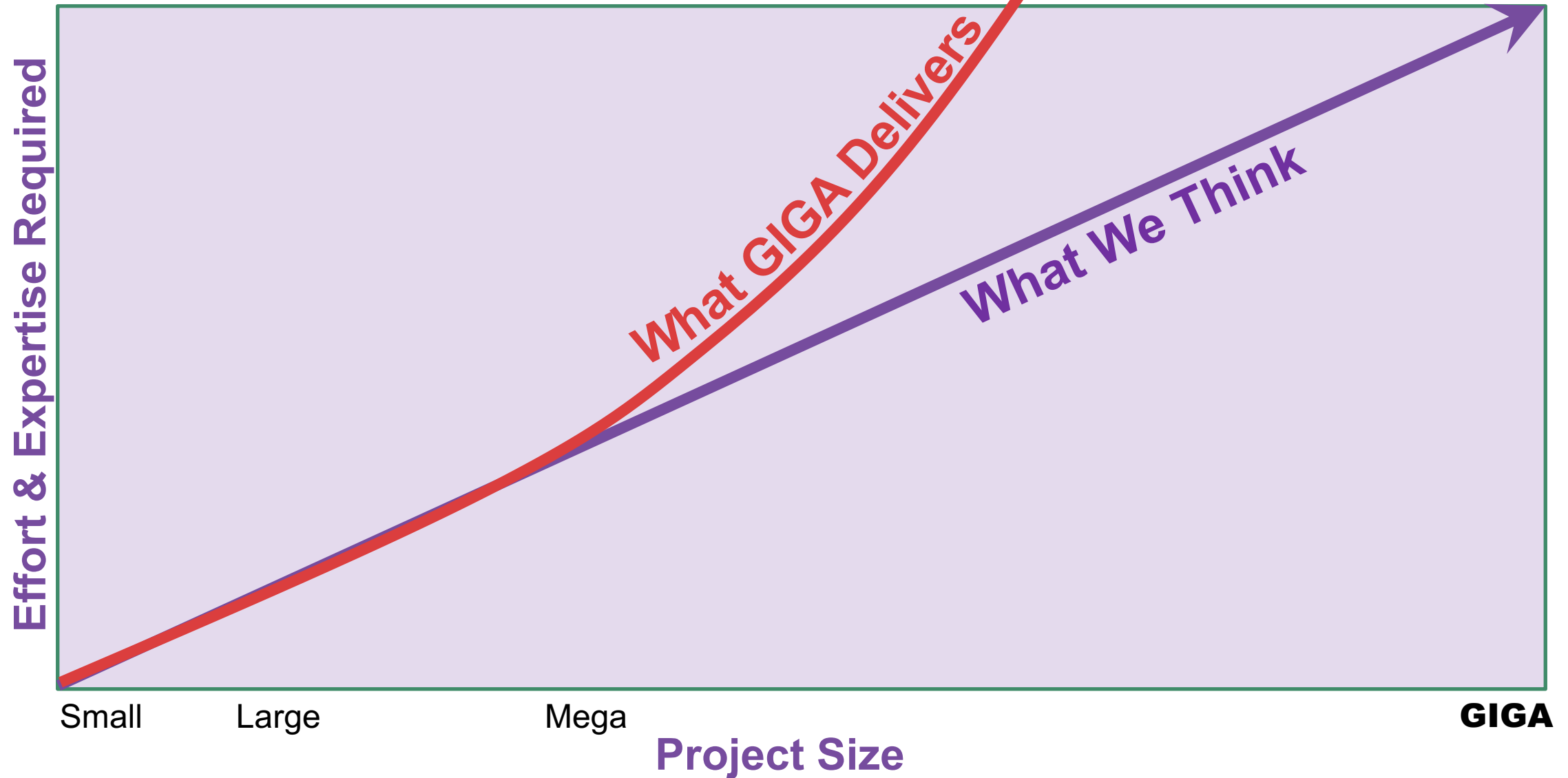
- What Volumes Will You Buy that the Market Will Struggle to Supply?
 - Rotating Equipment?
 - Analyzers?
 - Special Metallurgy?
 - Switchgear?
 - Etc...
- Pinch Points Require Special Mitigation Efforts



Nonlinearities

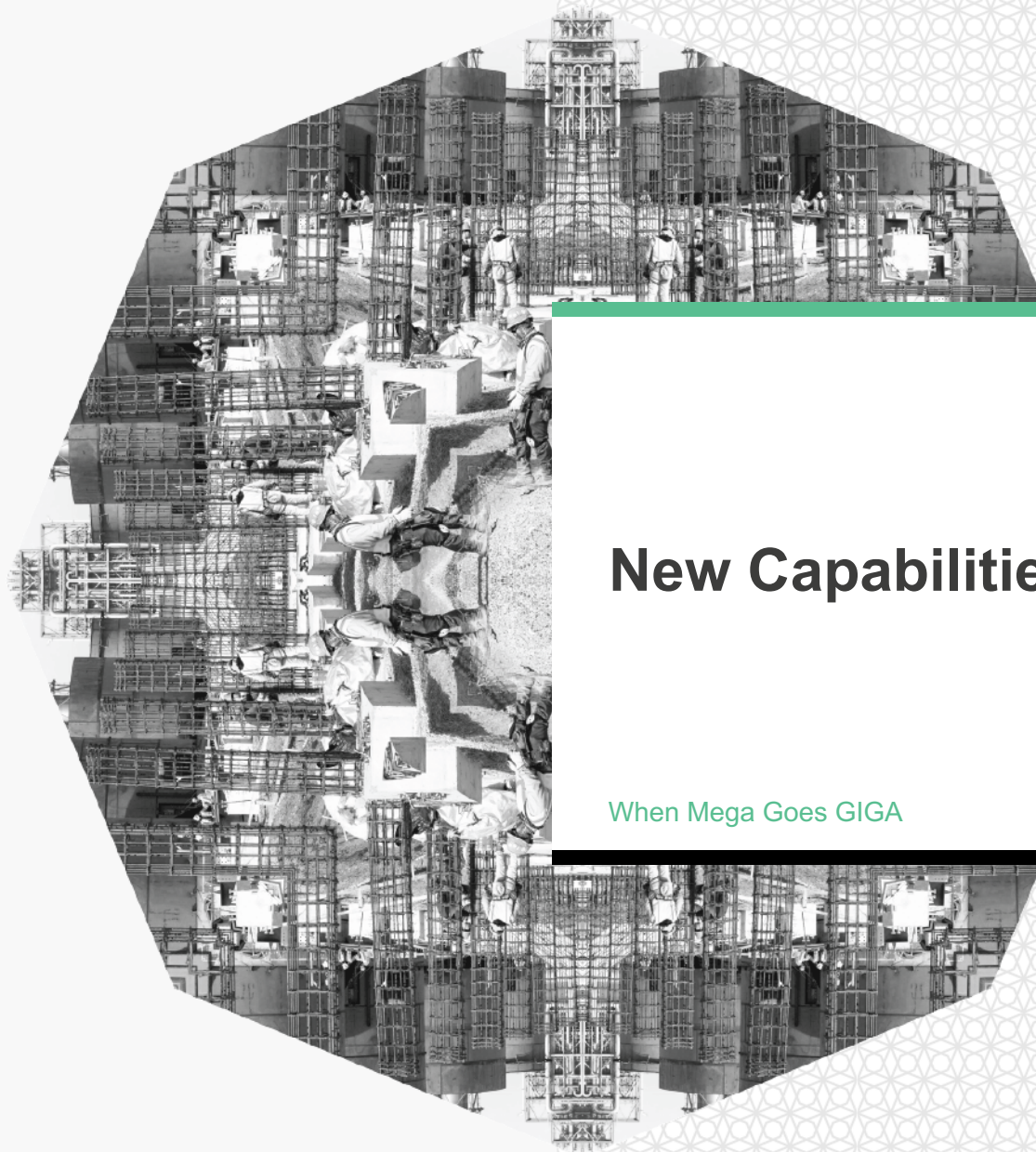
When Mega Goes GIGA

GIGA is Not an Extrapolation of Your Past Experiences



Examples of GIGA Nonlinearities

- FEED Iterations – Massive Parallel Optimizations
- Interface Management – The Number & Complexity of Interface Points
- Change Management – The Domino Effect
- Risk Management – On Steroids
- Personnel Turnover
- Learning & Leveraging
- Black Swans Redefined – Typically Small Risks are Now Large



New Capabilities Required

When Mega Goes GIGA

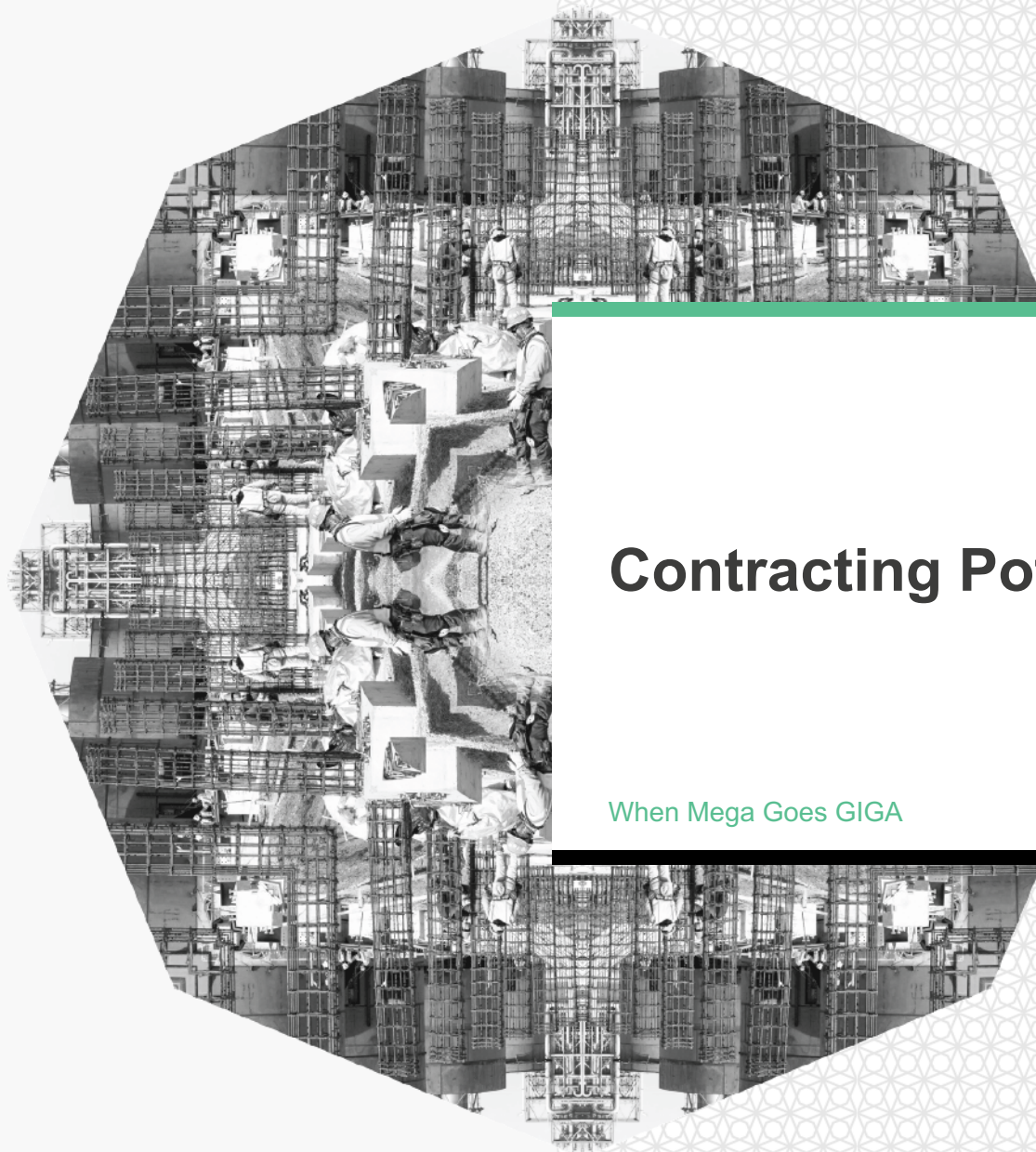
New Capabilities Required by GIGA

- A Four-Dimensional Organization with Proactive Morphing
- Standardization Plus
- Office of Intervention
- Integrated Asset Delivery
- Strategic Float
- Staying Aligned – Organizational Effectiveness
- 1st Product Team
- Proactively Managing 'Black Swans'

Small Things that Grow Up to be Big

- Attracting & Retaining Talent
- Career Management
- Financing Support
- Community Relations
- Construction Workforce Marshalling



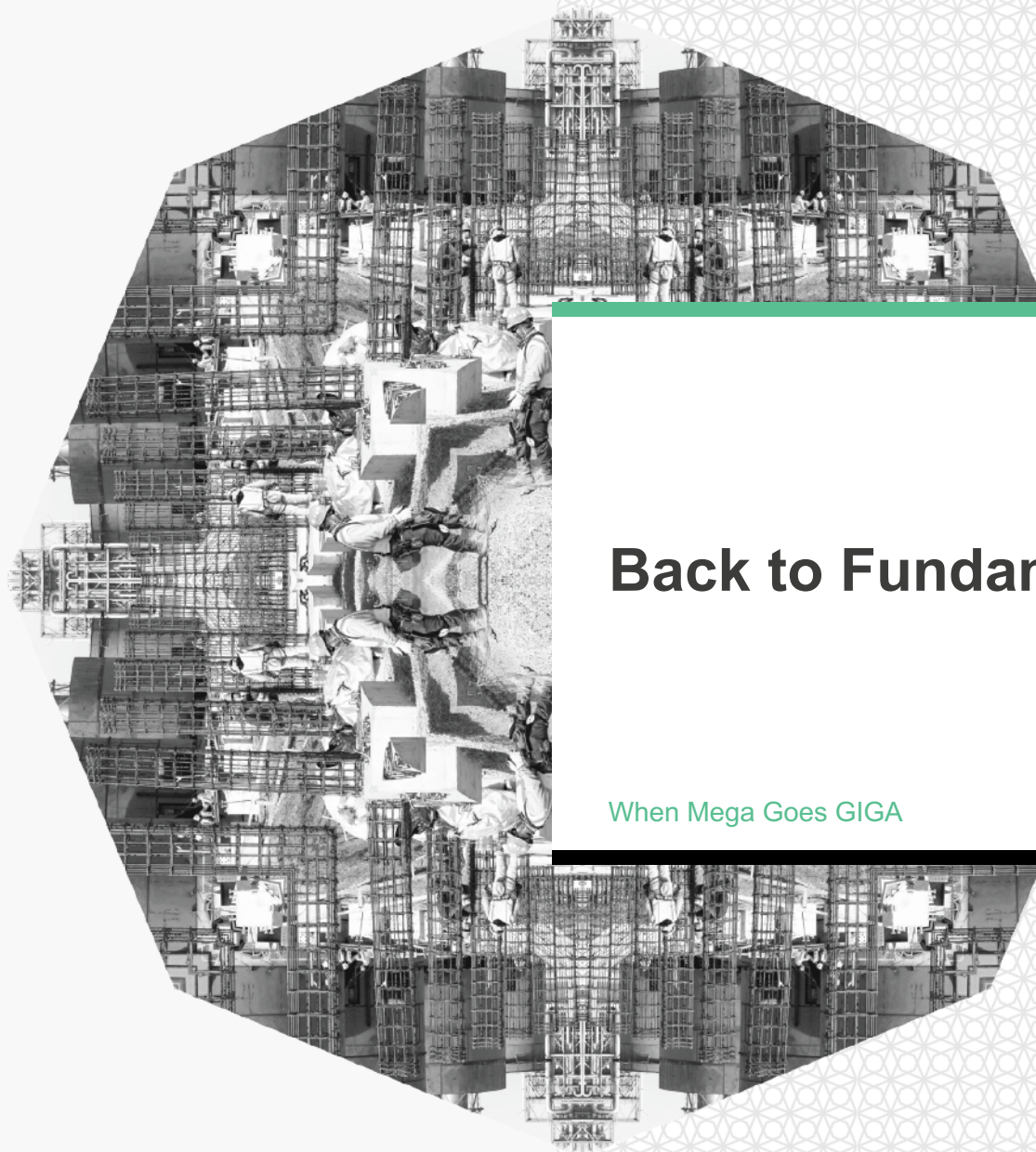


Contracting Potpourri

When Mega Goes GIGA

There is No Single Contracting Style that Fits GIGA

- OSBL/Infrastructure is Always Late Getting its Process Data, but Must Startup 1st
- Attracting Sufficient Bids Requires a Mix of Contracting Types
- Newer Technologies are Still On Their Learning Curves – Scope Changes Likely
- It's Best Not to Let the Market Split Up Your Packages – Scale Them to the Market
- The Result: All Types of Contracts for which You Need to Be Prepared to Manage



Back to Fundamentals

When Mega Goes GIGA

GIGA is Intolerant of Forgetting to Do the Basics Well

- Full Staffing of Project Teams with Experienced Personnel
- Complete & Robust FEL Work & FEED Packages
- Full Implementation of Value-Improving Practices
- Benchmarking
- Gate Reviews
- Integrated, Backward Pass, Resource Loaded Scheduling
- Progress & Critical Path Monitoring & Reporting
- Robust Change Management
- Vigorous Risk Management
- Proactive Contract Management

A photograph of a roller coaster car, likely the Giga coaster at Six Flags Great Escape & Escape Island, inverted on a green track. The car is yellow and red, and is filled with people. The track is supported by red steel beams. The background shows palm trees and a clear blue sky.

GIGA is an Unforgettable Roller-Coaster Ride!

When Mega Goes GIGA

But Allows You to Achieve Things No One Else Has Achieved.



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